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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,262	08/19/2003	Robert William Bruce	13DV-13041-15	4669
30952	7590	11/30/2004		
HARTMAN AND HARTMAN, P.C. 552 EAST 700 NORTH VAIPARAISO, IN 46383				
EXAMINER BUEKER, RICHARD R				
ART UNIT		PAPER NUMBER		
1763				

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/643,262

Applicant(s)

BRUCE ET AL.

Examiner

Richard Bueker

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 40-52 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 40-52 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 40-42 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sekiguchi (JP 07-258832). Sekiguchi (abstract, Figs. 1-4) discloses an EBPVD apparatus comprising a coating chamber in which a source material in a crucible is heated by an electron beam to a high temperature under vacuum. Therefore, the coating chamber is operable at an elevated temperature and a subatmospheric pressure as claimed. A first aperture is provided in chamber wall 2 (Figs. 1-4), through which the electron beam passes. Alternatively, aperture 27 can be considered "a first aperture in a wall of the coating chamber through which the electron beam must pass". In either case, it can be seen from Figs. 1, 2 and 4 that the first aperture is inherently enclosed by a second chamber that is within the coating chamber. The second chamber is evacuated by vacuum connection 32 in Figs. 1 and 2, or vacuum connection 28 in Fig. 4. Col. 6, lines 46-49 of Sekiguchi teaches that P_1 is less than P_{n-1} , which is less than P_n . Therefore, the second chamber is at a lower pressure than the coating region. Regarding the hood recited in

claim 42, it is noted that Sekiguchi illustrates the use of a partition 9 to partition the coating chamber, and the partition and the space below it can be considered to inherently be a hood.

Claims 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi (JP 07-258832) taken in view of Suzuki (JP 08-185820). If the apparatus of Sekiguchi were not considered to include a hood, it would have been obvious to provide it with a hood in view of Suzuki (see Fig. 3), who teaches that an apparatus of the type disclosed by Sekiguchi can usefully be fitted with a hood 7 (Fig. 3) to confine a coating region, the hood having an aperture 7b in the wall of the hood through which the electron beam enters the coating region.

Claims 47, 48, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi (JP 07-258832) taken in view of Suzuki (JP 08-185820) for the reasons stated in the previous paragraph, and taken in further view of Schadler (3,854,984) (see col. 2, lines 25-30) who teaches that a coating material is conventionally melted by an electron beam as required by claim 47, and it would have been obvious to one skilled in the art to provide an electron beam gun operable for melting coating material in view of the teachings of Schadler.

Claims 1, 40-44 and 47-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy (5,716,720) taken in view of Sekiguchi (JP 07-258832) and Suzuki (JP 08-185820). Murphy (Fig. 4) discloses an EBPVD apparatus having a coating chamber with a hood inside the coating chamber that defines a coating region. Murphy teaches (col. 5, lines 54-55) that the hood has an aperture through which the

electron beam enters the coating region. The electron gun is located outside of the coating chamber, but Murphy does not specifically state that a wall of the coating chamber also has an aperture through which the electron beam must pass. Sekiguchi and Suzuki, however, teach that a conventional electron gun requires an aperture in the coating chamber wall to pass an electron beam into an EBPVD apparatus. It would have been obvious to one skilled in the art to use the electron beam gun taught by Sekiguchi and Suzuki as the electron beam gun used in Murphy's apparatus so as to sustain the coating process over a long period of time as taught by Sekiguchi (abstract). It is noted that Suzuki also teaches the utility of using vacuum pumps 35 and 37 (Figs. 2 and 3) to differentially pump his electron gun and electron beam entryway in the manner of Sekiguchi, and in combination with the use of a hood 7 that surrounds the coating region.

Claims 45, 46, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy (5,716,720) taken in view of Sekiguchi (JP 07-258832) and Suzuki (JP 08-185820) for the reasons stated in the previous paragraph, and taken in further view of Aichert (4,238,525), who teaches (Fig. 1) that an electron beam gun can be placed in a perpendicular position on a horizontal ceiling of a coating chamber. Aichert teaches that an EBPVD process inside of a hood can be successfully operated with this e-beam gun position. For that reason it would have been prima facie obvious to position an e-beam gun in that position in Murphy's apparatus. Such an arrangement, when using the prior art e-beam gun of Sekiguchi, would result in the

Art Unit: 1763

second, lower pressure chamber of Sekiguchi having a lower wall parallel to the hood wall as claimed in claims 45-46.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Skelly (5,773,078) (see col. 1, lines 49-60) and Murphy (5,856,027) (see col. 6, lines 53-56) are cited of interest to make clear that the pool of zirconia described at col. 6, lines 53-56 of Murphy (5,716,720) is a molten pool. Callaway (6,319,569) is also cited of interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard Bueker

Richard Bueker
Primary Examiner
Art Unit 1763